MycoKeys 25: 51–86 (2017)
doi: 10.3897/mycokeys.25.13375
http://mycokeys.pensoft.net

RESEARCH ARTICLE

A peer-reviewed open-access journal
MycoKeys
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Taxonomic novelties and new records of Fennoscandian crustose lichens

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Academic editor: *Imke Schmitt* | Received 24 April 2017 | Accepted 29 June 2017 | Published 10 July 2017

Citation: Svensson M, Ekman S, Klepsland JT, Nordin A, Thor G, von Hirschheydt G, Jonsson F, Knutsson T, Lif M, Spribille T, Westberg M (2017) Taxonomic novelties and new records of Fennoscandian crustose lichens. MycoKeys 25: 51–86. https://doi.org/10.3897/mycokeys.25.13375

Abstract

We present taxonomic, distributional and ecological notes on Fennoscandian crustose lichens and lichenicolous fungi, based on new collections as well as revision of herbarium material. Two new combinations are proposed: *Frutidella furfuracea* comb. nov. for *F. pullata* and *Puttea duplex* comb. nov. for *Fellhanera duplex*. *Lecidea byssoboliza*, *L. carneoglauca* and *Variolaria torta* are all reduced to synonymy with *Bacidia antricola*, *Bacidia invertens* is synonymized with *B. igniarii*, *B. atrolivida* with *Mycobilimbia tetramera*, and *Gyalidea fruticola* with *Thelenella pertusariella*. A new description is provided for *Micarea hylocomii*. 25 species of lichens and lichenicolous fungi are reported as new to Finland, Norway and/or Sweden: *Absconditella lignicola* (Norway), *Bacidia antricola* (Norway), *B. polychroa* (Norway), *B. pycnidiata* (Sweden), *Bacidina adastra* (Sweden), *Biatora veteranorum* (Norway), *Briancoppinsia cytospora* (Finland), *Catillaria scotinodes* (Norway), *Cliostomum subtenerum* (Norway), *Dirina fallax* (Sweden), *Fellhaneropsis almquistiorum* (Norway), *Gyalidea subscutellaris* (Sweden), *Lecania inundata* (Norway), *L. suavis* (Norway), *Micarea capitata* (Norway), *M. deminuta* (Norway), *M. hylocomii* (Sweden), *M. lynceola* (Sweden), *M. soralifera* (Sweden), *M. subconfusa* (Sweden), *Mycoblastus sanguinarioides* (Finland, Sweden), *Paralecia pratorum* (Sweden), *Puttea duplex* (Sweden), *Sarcogyne algoviae* (Finland) and *Toninia subnitida* (Norway). Lectotypes are designated for *Bacidia antricola*, *Lecidea byssoboliza*, *Lecidea carneoglauca*, *Lecidea subconfusa* and *Lecidea submoestula*.

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Key words
Ascomycota, lectotypification, lichens, Ramalinaceae, Pilocarpaceae

Introduction

The diversity of lichen-forming and lichenicolous fungi in Fennoscandia is often considered to be reasonably well-known, yet new species are discovered continuously. In 2004, the Fennoscandian checklist included 2414 lichen-forming species (Santesson et al. 2004), while the most recent one includes 2538 species (Nordin et al. 2017). Although new discoveries of macrolichens are indeed made (e.g., Arvidsson et al. 2012, Frödén and Thell 2010, Klepsland 2013, Westberg et al. 2015, 2016), the main uncharted territory is found within the world of small, crustose lichens (e.g., Arup et al. 2014, Ekman 2015, Svensson and Palice 2009, Westberg et al. 2011, 2015, 2016). Crustose lichens comprise about two thirds of all lichens in Fennoscandia, but the taxonomic status, distribution and ecology of several hundred of these species are virtually unknown. The aim of this paper is to contribute to the understanding of Fennoscandian crustose lichen species by reporting a number of species as new to one or more Fennoscandian countries and by providing taxonomic and nomenclatural novelties, including new combinations, synonymizations and lectotypifications, on a series of crustose lichens and lichenicolous fungi.

Material and methods

Light microscopy measurements were made on material mounted in water using an oil-immersion lens, with a precision of 1 µm. Only well-developed ascospores lying outside the asci were measured. Measurements of asci and paraphyses of *Micarea hylocomii* were made on material cut to sections 12–18 µm thick using a freezing microtome and stained with lactophenol cotton blue. HPTLC was performed using the method described by Arup et al. (1993). Coordinates are in the WGS84 map datum unless otherwise stated.

Taxonomy

Absconditella lignicola Vězda & Pišút

Nova Hedwigia 40: 344 (1985, "1984"). – Type: Slovakia, Carpates, in valle torrentis Hincov potok supra lacum Strbské pleso, ad truncum decorticatum *Piceae exselsae* in Piceeto montano, alt. 1300 m, 22 Aug 1983, I. Pišút & A. Vězda (PRA-V, holotype, not seen; BRA, GZU, M, isotypes, not seen).

New to Norway. Reported from much of the Northern hemisphere as well as Tasmania (Coppins 2009a, Urbanavichus 2010).

In Norway, this species has usually been collected from the upper side of large, relatively recently decorticated logs of *Picea abies*, but once also on a stump (not cut). It has, however, also been collected on logs of *Populus tremula* and *Pinus sylvestris*. The species is mostly found in association with slimy biofilms, in Norway often accompanied by *Micarea peliocarpa* (Anzi) Coppins & R.Sant. All Norwegian finds have been made in lowland *Picea* forests in the Oslofjord area. Most of the localities are characterized by high productivity with moderate to large amounts of dead wood.

Specimens examined: NORWAY: Buskerud, Øvre Eiker, Knivfjellet-Snaukollen, på middels nedbrutt, barkløs granlåg, gammel blåbær-granskog med mye død ved, MGRS NM 5403 3438 [=59.8436°N 9.9642°E], alt. 590 m, 15 May 2016, J. T. Klepsland JK16-229a (O-L-206462). Buskerud, Lier, Storkollen S, på stor barkløs granstubbe i tett granbestand ved skiløype, svak lågurtskog, MGRS NM 6458 3228 [=59.8232°N 10.1518°E], alt. 375 m, 31 May 2016, J. T. Klepsland JK16-247 (O-L-206548). Oslo, Oslo, Solbergvannet S, barkløs granlåg, lite nedbrutt, eldre blåbær-granskog i terrengforsenkning/liten bekkedal, MGRS PM 0452 4146 [=59.8974°N 10.8683°E], alt. 235 m, 23 April 2014, J. T. Klepsland JK14-L033 (O-L-200173). Oslo, Oslo, Solbergvannet S, barkløs, lite nedbrutt granlåg, eldre blåbær-granskog i terrengforsenkning/liten bekkedal, MGRS PM 0450 4139 [=59.8968°N 10.8680°E], alt. 235 m, 27 April 2014, J. T. Klepsland JK14-L039 (O-L-200180). Oslo, Oslo, Solbergvannet S, barkløs, middels nedbrutt furulåg, eldre blåbær-barblandingsskog, MGRS PM 0447 4143 [=59.8971°N 10.8675°E], alt. 235 m, 27 April 2014, J. T. Klepsland JK14-L038c (O-L-200179). Oslo, Oslo, Solbergvannet SØ, på barkløs ospelåg, middels nedbrutt, eldre blåbær-granskog i terrengforsenkning, MGRS PM 0466 4133 [=59.8962°N 10.8708°E], alt. 240 m, 27 April 2014, J. T. Klepsland JK14-L042 (O-L-200183). Oslo, Oslo, Sarabråten N, barkløs, lite nedbrutt granlåg, rik sørboreal blandingsskog (grandominert), MGRS PM 0522 4098 [=59.8929°N 10.8806°E], alt. 220 m, 27 April 2014, J. T. Klepsland JK14-L049 (O-L-200188).

Bacidia antricola Hulting

Lichenol. exkurs. vestra Bleking 17 (1872). – Type: Sweden, Blekinge, Hällaryd par., "Valhall", 1871, J. Hulting (UPS L-753472, lectotype, designated here by SE; GB 0151489, LD, S L4637, S L69089, isolectotypes, seen by SE).

Variolaria torta Taylor in Mackay, Fl. Hibern. 2: 114 (1836), *nom. rejic. prop.* (ICN Art. 56.1). – Type: Ireland, Co. Kerry, "shaded rocks, Askew Wood", T. Taylor (BM 000974464, holotype or syntype, seen by SE).

Lecidea carneoglauca Nyl., Flora 56: 295 (1873). *Bacidia carneoglauca* (Nyl.) A.L.Sm., Monogr. Brit. Lich. 2: 155 (1911). – Type: Jersey, "shady rocks near Rozel", 1873, C. Du Bois Larbalestier (BM 000974466, lectotype, designated here by SE; H-NYL 17406, isolectotype marked "Jersey", seen by SE).

Lecidea byssoboliza Nyl., Flora, Regensburg 62: 206 (1879). *Bilimbia byssoboliza* (Nyl.) A.L.Sm., Monogr. Brit. Lich. 2: 141 (1911). *Bacidia byssoboliza* (Nyl.) H.Olivier, Bull. Géogr. Bot. 21: 170 (1911). – Type: Ireland, Co. Galway, "in antro, Killery Bay prope Kylemore", 1878, C. Du Bois Larbalestier (H-NYL 21838, lectotype, designated here by SE; no obvious isolectotypes in BM).

New synonyms. New to Norway. Previously known from the United Kingdom, Ireland, Sweden, the Netherlands, Luxembourg, Belgium, Germany, Austria, and the Czech Republic (Hulting 1872, Bouly de Lesdain 1910, van den Boom et al. 1999, Palice 1999, Aptroot et al. 2004, Coppins and Aptroot 2009, Berger and Türk 1993, Wirth et al. 2013, Diederich et al. 2014). Previously reported from Norway by Santesson et al. (2004), but the material on which this report was based has later been shown to be misidentified.

The types of *Variolaria torta*, *Bacidia antricola*, *Lecidea carneoglauca*, and *L. byssoboliza* are clearly conspecific. *Variolaria torta*, by far the oldest name, has after its introduction only been briefly mentioned by Adams (1909) and Zahlbruckner (1928) as a dubious name. Therefore, in the interest of nomenclatural stability, a proposal to reject *Variolaria torta* has been submitted (Ekman 2017). The type material of this name in BM consists of a small but well preserved and readily identifiable specimen with abundant pycnidia but no apothecia, sent to W. J. Hooker by Taylor. Among the remaining names, the combination *Bacidia carneoglauca*, introduced by Smith (1911) is currently the most widely used. However, *Bacidia antricola* was validly published in the dissertation of Johan Hulting no later than 27 May 1872 (Hulting 1872) and is consequently older than *Lecidea carneoglauca*. *Bacidia antricola* has been included in every subsequent lichen flora or checklist of Swedish lichens (e.g., Fries 1874, Forssell and Blomberg 1880, Magnusson 1936, Santesson 1984, Foucard 1990, Foucard 2002). Furthermore, there are reports under this name from Belgium (Bouly de Lesdain 1910), as well as a further Swedish record (Hulting 1925). Therefore, this name is adopted here. The lectotype of *Bacidia antricola* selected here is the largest and most well developed of the five available syntypes, with numerous pycnidia and several apothecia in various states of development.

Although geographically widely separated, both of the newly discovered Norwegian sites for *B. antricola* are situated close to the west-coast, with an oceanic climate. At both sites, the species grew on somewhat metal-enriched rocks in shady and humid situations, below overhanging cliffs and sheltered from rain. At the southernmost locality, the species was largely confined to steep or almost vertical rock walls at the entrance of an old (copper?) mine. The entrance to the cave is situated in a steep ESE-facing hillside, close to but well above the fjord, and is surrounded by a lush forest dominated by *Corylus avellana*, *Fraxinus excelsior*, and *Ulmus glabra*. At the northern locality, the species was mainly found on horizontal or slightly inclined rocks along a small stream, deep underneath an overhang at the bottom of a small but topographically uneven south-facing hill. The surrounding forest is dominated by *Betula pubescens* and *Populus tremula*, with scattered *Corylus avellana*.

Additional specimens examined: NORWAY: Hordaland, Kvinnherad, Djupevika (Varaldsøy naturreservat), på skyggefullt, jernrikt berg i gruveåpning. Rik edelløvskog,

MGRS LM 3575 6867 [=60.1220°N 6.0437°E], alt. 130 m, 12 September 2015, J. T. Klepsland JK15-L139 (O-L-204535). Nord-Trøndelag, Leka municipality, Gjertrudvika N, on shaded pebbles and rocks by a small stream beneath an overhanging rock wall in a forest dominated by birch and aspen, 65.0448°N 11.5696°E, alt. 40 m, 3 July 2016, J. T. Klepsland JK16-461 (O). SWEDEN: Blekinge, Edestad par., c. 700 m WNW of Edestad, on small boulder on the ground in humid, deciduous forest, 56.21966°N 15.35112°E, alt. 25 m, 26 April 2013, S. Ekman 5640 (UPS L-782502). Södermanland, mellan Kvarsebo och Säter, på gneis (på en mycket skuggig lokal), 1909, J. Hulting (S L69092). Södermanland, Kvarsebo prope Säter, 19 August 1898, J. Hulting (S L69091); Ibid., 28 June 1910, J. Hulting (S L69090).

Bacidia igniarii (Nyl.) Oxner

Flor. Lish. Ukraini 2: 166 (1968). *Lecidea igniarii* Nyl., Flora 50: 328 (1867). – Type: Finland, "ad Polyp. igniarium in Tavastia", 1863, J. P. Norrlin (H-NYL 17232, lectotype selected by Ekman 1996, seen by SE).

Bacidia invertens Vain., Acta Soc. Fauna Flora Fenn. 53 (1): 149 (1922), non *Bacidia invertens* (Nyl.) Zahlbr., Cat. Lich. Univ. 4: 252 (1926). – Type: Finland, Etelä-Häme, "Tammela prestgård", 1868, A. Kullhem (H, holotype or possibly syntype, seen by SE).

New synonym. *Bacidia invertens* was listed as an accepted species by Stenroos et al. (2016). The type material, however, consists of a well developed and typical specimen of *Bacidia igniarii*, and the former is consequently reduced into synonymy. There is some doubt whether the specimen in H was the only one available to Vainio at the time of description. Surprisingly, there does not seem to be any material of *B. invertens* deposited in TUR (Alava 1988).

Bacidia polychroa (Th.Fr.) Körb.

Parerga Lich., fasc. 2: 131 (1860). – *Biatora polychroa* Th.Fr., Öfvers. Kongl. Vetensk.-Akad Förh. 12 (1): 17 (1855). – Type: Ukraine, "in Acere campestri", (UPS L-106162, lectotype selected by Ekman 1996, seen by SE).

New to Norway. This species is distributed across Europe and eastern temperate North America (Ekman 1996). Reports from other areas of the world probably represent other species. *Bacidia polychroa* is red-listed as threatened or regionally extinct in a number of countries where it has been assessed, *viz.* Sweden (ArtDatabanken 2015), Finland (Jääskeläinen et al. 2010), Germany (Wirth et al. 2011), and the United Kingdom (Woods and Coppins 2012).

The Norwegian find of *B. polychroa* was made at the base of an old *Acer platanoides* situated in a narrow and rather deep ravine in a region of mixed temperate woodland composed of e.g. *Corylus avellana*, *Fagus sylvatica*, *Fraxinus excelsior*, *Picea abies*, *Pinus sylvestris*, *Quercus robur*, and *Ulmus glabra*. The site is sheltered and characterized

by high humidity and minimal sun exposure. Several additional lichen species with oceanic preferences or a demand of high and stable air humidity grow in the vicinity, *viz. Bacidia biatorina* (Körb.) Vain., *B. laurocerasi* (Delise ex Duby) Zahlbr., *Bacidina phacodes* (Körb.) Vězda, *Coenogonium luteum* (Dicks.) Kalb & Lücking, *Gyalecta flotowii* Körb., *Lobaria virens* (With.) J.R.Laundon, *Pyrenula nitida* (Weigel) Ach., and *Thelotrema lepadinum* (Ach.) Ach.

Specimen examined: NORWAY: Vestfold, Larvik municipality, Fjærevardåsen E, on bark at base of old *Acer platanoides* in a deep, narrow wooded ravine, 59.1873°N 10.0515°E, alt. 150 m, 23 June 2016, J. T. Klepsland JK16-420 (UPS L-785596).

Bacidia pycnidiata Czarnota & Coppins

Fig. 1A–B

Lichenologist 38: 407 (2006). – Type: Czech Republic, Eastern Sudetes, Rychlebské hory Mts, W of Bila Voda village, vicinity of worked-out quarry of marble 'Kukačka' near the border of Poland, 50°26'18"N 16°53'14"E, alt. c. 360 m, on bryophytes over marble rock within mixed spruce-ash forest, 23 April 2004, P. Czarnota 4157 (GPN, holotype, not seen; E, UGDA, isotypes, not seen).

New to Sweden. *Bacidia pycnidiata* has been reported from Belgium, Poland, the Czech Republic, Slovakia, Lithuania, Estonia, Finland, Ukraine, and Russia (Republic of Mordovia and Republic of Adygea) in Europe, as well as the Republic of Buryatia south of Lake Baikal in Asian Russia (assuming that the watershed through Greater Caucasus is taken as the geographic border between Europe and Asia) (Czarnota and Coppins 2006, Suija et al. 2007, Ertz et al. 2008, Pykälä 2008, Motiejūnaitė et al. 2011, Dymytrova 2013, Malíček et al. 2014, Urbanavichus and Urbanavichene 2013, Urbanavichene and Urbanavichus 2014, Urbanavichene and Palice 2016). The species is mostly found on trunks of deciduous trees and shrubs, either directly on the bark or over bryophytes, in more or less shady and humid habitats. The autecological amplitude seems to be wide, however, and there are scattered finds on coniferous trees, more or less moribund cyanolichens, soil, as well as stones (or bryophytes on stones) on the ground, including metal-rich waste (Vondrák et al. 2010, Czarnota and Hernik 2014 in addition to references above). It has been suggested that the species is favoured by anthropogenic impact (Czarnota and Hernik 2014), although its ecological repertoire also includes semi-natural old-growth forests (Suija et al. 2007).

The Swedish find was made on bark of an old *Acer platanoides* in a semi-open stand of *Quercus robur* in a grazed field. The locality is situated at the outskirts of the town of Kalmar, and the surroundings consist partly of cultivated fields, partly of urbanized land (roads, housing, manufacturing, commerce, small airport etc.). Although frequently reported only in an anamorphic state, *B. pycnidiata* was found to produce abundant apothecia in the Swedish site.

Specimens examined: SWEDEN: Småland, Kalmar par., Hagbygärde, ekbacke S om Lantmännen, grov lönn i ekdominerad betad hagmark, 56.67492°N 16.30616°E,

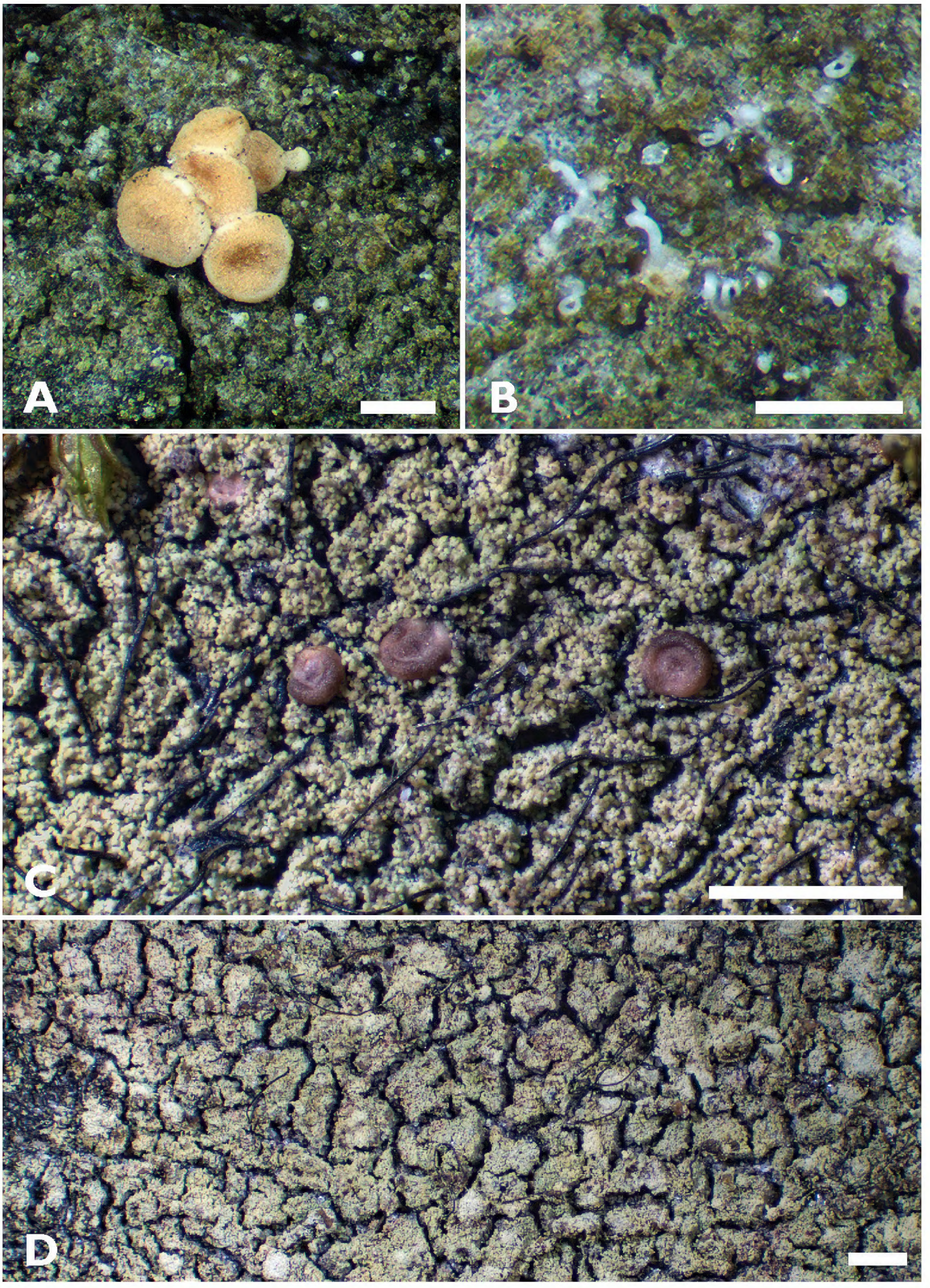

Figure 1. A–B *Bacidia pycnidiata* (UPS L-681835), **A** group of apothecia **B** pycnidia with long and curved necks. **C–D** *Bacidina adastra*, **C** close-up of thallus with apothecia, note intermingled black fibers belonging to the polypropylene fabric on which the specimen grows (UPS L-779918) **D** overview of thick, sterile thallus (UPS L-779932). Scale bars: 0.25 mm (**A–B**), 1 mm (**C–D**).

27 September 2011, T. Knutsson 2011-067 (UPS L-681835). ESTONIA: Jõgevamaa, Puurmani comm., Altnurga village, Pikknurme forestry, Altnurga ash forest, alt. 20–30 m, 58°32'40"N 26°17'00"E), on a fallen *Prunus padus*, 22 June 2005, G. Thor 18981 (UPS L-159702).

Bacidina adastra (Sparrius & Aptroot) M.Hauck & V.Wirth

Fig. 1C–D

Herzogia 23: 16 (2010). *Bacidia adastra* Sparrius & Aptroot, Lichenologist 35: 275 (2003). – Type: The Netherlands, Zuid-Holland, Gouda, Goudse Hout, landscape garden 'Heemtuin Goudse Hout', on fallen branch of *Salix alba*, 9 February 2001, L. B. Sparrius 4566 (L, holotype, not seen; ABL, herb. Sparrius, isotypes, not seen; E-00250877, isotype, seen by SE).

New to Fennoscandia. This species has been reported from the Netherlands, Belgium, United Kingdom, Ireland, Germany, Poland, Estonia, Czech Republic, Austria, Switzerland, France, Ukraine, Armenia, and Ecuador (Sparrius and Aptroot 2003, Kubiak and Sparrius 2004, Aptroot et al. 2005, Aptroot and Honegger 2006, Vondrák 2006, Coppins and Aptroot 2009, Khodosovtseva 2009, Berger and Priemetzhofer 2010, Roux 2012, Gasparyan and Sipman 2016). In several instances, however, reports have been based on sterile material, a questionable practice given that the species does not produce any secondary substances. In an addendum to Smith et al. (2009) (available at http://www.britishlichensociety.org.uk/recording-mapping/downloads, accessed 21 November 2016), *Bacidina adastra* is considered rare and strongly over-reported, being confused with crusts of free-living green algae. Morphologically, *B. adastra* is somewhat reminiscent of *B. neosquamulosa* (Aptroot & Herk) S. Ekman, which in its current delimitation may turn out to include more than one species. *B. neosquamulosa* in the strict sense forms imbricate, finely dissected microsquamules that may later disintegrate to form goniocysts. *B. adastra*, on the other hand, starts out as minute, sometimes somewhat flattened, granules that soon bud off new granules in a more or less coralloid manner, the end result being a thick, finely granular and pale green crust. In addition, the thallus surface tends to be more shiny in *B. neosquamulosa* than in *B. adastra*.

In Fennoscandia, *Bacidina adastra* is currently known from two sites in southern Skåne. The first find was made in a churchyard surrounded by houses in an otherwise open, agricultural landscape, where the species occurred in fair quantity and sparingly fertile on a young, planted *Ulmus*. The second find was made in the northern outskirts of the town of Lund, in public plantations with a variety of shrubs where the ground had been covered by a black fabric of non-woven polypropylene to prevent weeds from establishing. This fabric is colonized by a variety of lichens, mostly crustose lichens during the first years, whereas later successional stages are dominated by *Peltigera didactyla* (With.) J.R.Laundon and species of *Cladonia*. The crustose lichen flora is richest in species and individuals in slopes with moderate shade from shrubs.

Slopes seem to be preferred because leaf litter does not easily accumulate on the fabric. The richest spots are downhill from fences cutting through the plantations, where the concentration of metal ions is probably high. Apart from large spots of abundantly fertile *Bacidina adastra*, other lichens encountered on the ground cover fabric were *Agonimia globulifera* M.Brand & Diederich, *Bacidina chloroticula* (Nyl.) Vězda & Poelt, and *Peltigera didactyla*.

Additional specimens examined: SWEDEN: Skåne, Norra Nöbbelöv par., 75 m WNW of the church, on ground cover fabric in plantation of shrubs, 55.7321°N 13.1639°E, alt. 25–30 m, 15 October 2011, S. Ekman 5635 (UPS L-779932). Skåne, Norra Nöbbelöv par., 150 m WSW of the church, on ground cover fabric in plantation of shrubs, 55.7315°N 13.1627°E, alt. 25–30 m, 15 October 2011, S. Ekman 5632 (UPS L-779918). Skåne, Norra Nöbbelöv par., 170–190 m W of the church, on ground cover fabric in plantation of shrubs, 55.7318°N 13.1621°E, alt. 25–30 m, 15 October 2011, S. Ekman 5628, 5629, 5630, 5631 (UPS L-779914, L-779915, L-779916, L-779917). Skåne, Södra Åby par., at S side of the church, just outside the bordering hedge, on young *Ulmus*, 55.3853°N 13.3104°E, 13 August 2001, S. Ekman 5637 (UPS L-781595).

***Biatora veteranorum* Coppins & Sérus.**

in Sérusiaux et al., Bryologist 113: 337 (2010). *Catillaria alba* Coppins & Vězda in Vězda, Lichenes Rariores exsiccati 53 (1993), non *Biatora alba* (Schleich.) Hepp. – Type: Austria, Tirol, Hohe Tauern, Virgen, Hinteregg, ad truncum putridum *Laricis*, alt. ca. 1600 m, 1 Sept 1988, A. Vězda (PRA-V, holotype, not seen; UPS L-030528, isotype, seen by SE).

New to Norway. Previously known from Sweden, Denmark, Scotland, France, Germany, Poland, the Czech Republic, Slovakia, Austria, Spain, Italy, Ukraine, Russia, and Rwanda (Vězda 1993, Palice 1999, Czarnota 2003, Killmann and Fischer 2005, Coppins et al. 2005, Sérusiaux et al. 2010, Knutsson 2014, Urbanavichus and Urbanavichene 2014).

The Norwegian finds were made on old and hard wood, in one case on the underside of a decorticated, leaning trunk of *Sorbus aucuparia* in a rain-sheltered site under an over-hanging rock, and in two other cases on wood of very old but living *Taxus baccata*, both on the underside of decorticated branches and on vertical surfaces inside a hollow trunk. All known localities consist of humid oldgrowth forests dominated by spruce and aspen or by birch and aspen. No apothecia were observed in the Norwegian sites, but numerous white and stalked pycnidia were present. Conidia in the Norwegian specimens measure c. 4 × 1.5 µm, and the photobiont is chlorococcoid, 6–15 µm diam. By comparison, conidia and photobiont cells in an isotype of *Catillaria alba* (UPS L-030528) measure 3.1–4.2 × 1.5–1.9 and 7–13 µm, respectively.

Additional specimens examined: NORWAY: Aust-Agder, Evje og Hornnes, Prestøygardsvatnet Ø, på hard ved på undersiden av lutende gammel rogn, skyggefull

eldre blåbær-røyrkvein-ospedominert skog med gran og rogn, MGRS MK 3915 9650 [=58.6046°N 7.9528°E], alt. 445 m, 12 October 2013, J. T. Klepsland JK13-L740 (O-L-206558). Aust-Agder, Evje og Hornnes, Svartebergli, på hard ved inni stammeskadet gammel barlind, middelaldret edelløvblandet bjørk-ospeskog med gammel barlind, MGRS MK 2268 9427 [=58.5820°N 7.6702°E], alt. 325 m, 26 December 2016, J. T. Klepsland JK16-926 (O-L-206549). Aust-Agder, Evje og Hornnes, Svartebergli, på undersiden av gamle, hengende døde greiner på gammel barlind, eldre edelløvblandet bjørk-ospeskog med gammel barlind, MGRS MK 2255 9425 [=58.5818°N 7.6680°E], alt. 370 m, 26 December 2016, J. T. Klepsland JK16-928 (O-L-206550).

Briancoppinsia cytospora (Vouaux) Diederich et al.

In Diederich et al., Fungal Diversity 52: 8 (2012). *Phyllosticta cytospora* Vouaux, Bull. Trimestr. Soc. Mycol. Fr. 30: 193 (1914). *Phoma cytospora* (Vouaux) D. Hawksw., Trans. Br. Mycol. Soc. 67: 56 (1976). – Type: Luxembourg, N of Reckange (Mersch), Enelter Kapelle, on old trunk of *Aesculus*, on degenerate thalli of cf. *Lecanora conizaeoides*, 3 September 2009, P. Diederich 16849 (BR, neotype, selected by Diederich, Ertz, Lawrey and van den Boom in Diederich et al. 2012, not seen; GMUF, herb. Diederich, herb. van den Boom, isoneotypes, not seen).

New to Finland. *Briancoppinsia cytospora* is widespread in Europe and has also been reported from the United States. (Diederich et al. 2012). In Fennoscandia, the species has previously been reported from Norway and Sweden (Santesson 1993). A member of the Arthoniaceae (Arthoniales), this species is a lichenicolous fungus on *Lecanora conizaeoides* Nyl. ex. Cromb., *Cladonia* spp., *Pertusaria* spp., and various parmelioid lichens (Diederich et al. 2012). It is recognized by the globose pycnidia with initially punctiform ostioles that later expose the white conidial mass, the KI+ red pycnidial gel, and the slightly curved conidia measuring 5.8–6.8 × 1.6–2.0 µm (Diederich et al. 2012).

Briancoppinsia cytospora was first encountered on *Hypogymnia physodes* (L.) Nyl. growing on *Ulmus*. Subsequently, we examined all Finnish collections of *H. physodes* in herbarium UPS, which resulted in five additional finds.

Specimens examined: FINLAND: Nylandia, 3 km SE Helsinki downtown, Suomenlinna (Sveaborg) fortress, on *Ulmus glabra*, elev. 15 m, 60°08'38"N 24°59'08"E (WGS84, ±150 m), 31 July 2016, G. Thor 33920 (UPS). Regio Aboënsis, Raisio, base of Kullavuori hill, 26 May 1969, R. Alava, K. Alho & U. Laine (UPS L-189538, filed under *H. physodes*). Tavastia australis, Toijala, 15 August 1931, G. Degelius (UPS L-086913, filed under *H. physodes*). Tavastia australis, Kylmäkoski, Taipale in vicinity of the farm Matti Seppälä, 28 March 1965, L. Kärenlampi (UPS L-189542, filed under *H. physodes*). Savonia borealis, Pielavesi, W-Säviä, Alava prope Matopuro, 10 October 1960, A. J. Huuskonen (UPS F-785388). Ostrobottnia Media, Nykarleby, Döbeln-monumentet, 27 June 1957, G. Degelius (UPS L-086920, filed under *H. physodes*).

Catillaria scotinodes (Nyl.) Coppins

Fig. 2A

Lichenologist 21: 223 (1989). *Lecidea scotinodes* Nyl., Flora 56: 295 (1873). *Kiliasia scotinodes* (Nyl.) Coppins in Gilbert et al., Lichenologist 20: 238 (1988). – Type: Scotland, Perth and Kinross, V. C. 88, 'Craig Tulloch, Blair Athole, ad saxa micaceo-schistosa', August 1871, J. M. Crombie (H-NYL, BM, syntypes, not seen, UPS L-196597, potential but undated syntype, seen by SE).

New to Norway. Previously reported from Sweden (Coppins 1994), United Kingdom (Coppins 1989), and Switzerland (Groner 2006). Reports from the Ukraine of *'Catillaria* aff. *scotinodes'* (Khodosovtsev et al. 2007), based on material that is similar to *C. scotinodes* except in having brown instead of green pigment in the epihymenium, possibly refers to *Catillaria aphana* (Nyl.) Coppins or *Bacidia freshfieldii* (Vain.) Zahlbr.

The Norwegian locality is situated close to the Barents Sea, just within the southern part of the arctic climate zone. The site is characterized by dwarf-shrub heath and sharp rocky ridges of layered, steeply inclined, metamorphic rocks of varying composition, both acid and base-rich. *Catillaria scotinodes* was found growing on a fairly exposed ridge of calciferous sandstone with layers of dolomite.

Additional specimens examined: NORWAY: Finnmark, Vardø municipality, Persfjord NW, on ridge of calciferous sandstone in subarctic heath, fairly exposed, 70.4253°N 30.7574°E, alt. 40 m, 1 July 2014, J. T. Klepsland JK14-L355 (UPS L-785594). SWEDEN: Dalarna, Idre par., Mount Vålåberget (just E of Idre), at the top of the very steep uppermost part of the mountain, on rocks in open situation, 61°50'N 12°49'E, alt. 600 m, 7 October 1989, R. Moberg 9040 (UPS L-13858). Jämtland: Åre par., Handöl Rapids in river Handölån, W of lake Ånnsjön, E shore of the river, S of the suspension bridge and N of the small hill with boulders c. 400 m SSW of the bridge, on flat part of schistose rock on the shore, 63°23'N 12°45'E, alt. 570 m, 31 July 1993, B. Owe-Larsson H93-47a (UPS L-696344). Lycksele lappmark, Tärna par., Ume älv, Strimasund, udde S om Strimasundet, svagt lutande kalkstrandklippa i övre geolitoral, 66°03'N 14°52'E, alt. 520 m, 1 September 1963, G. E. Du Rietz 700b (UPS L-132194).

Cliostomum subtenerum Coppins & Fryday

In Fryday & Coppins, Lichenologist 44: 724 (2012). – Type: Great Britain, Wales, V. C. 52, Anglesey, NE of Amlwch, cove E of Llam Carw, 23/460.936, on vertical siliceous ('green' schist) coastal rocks above HWM, 11 June 1995, S. P. Chambers s. n. (E, holotype, not seen).

New to Norway. This species was recently described from two sites in the British Isles, one in Wales and one in Scotland (Fryday and Coppins 2012).

C. subtenerum was encountered at the Helgeland coast in central Norway, only 200 m from the coastline, where it occupied a shelf appearing on a roughly horizontal rock

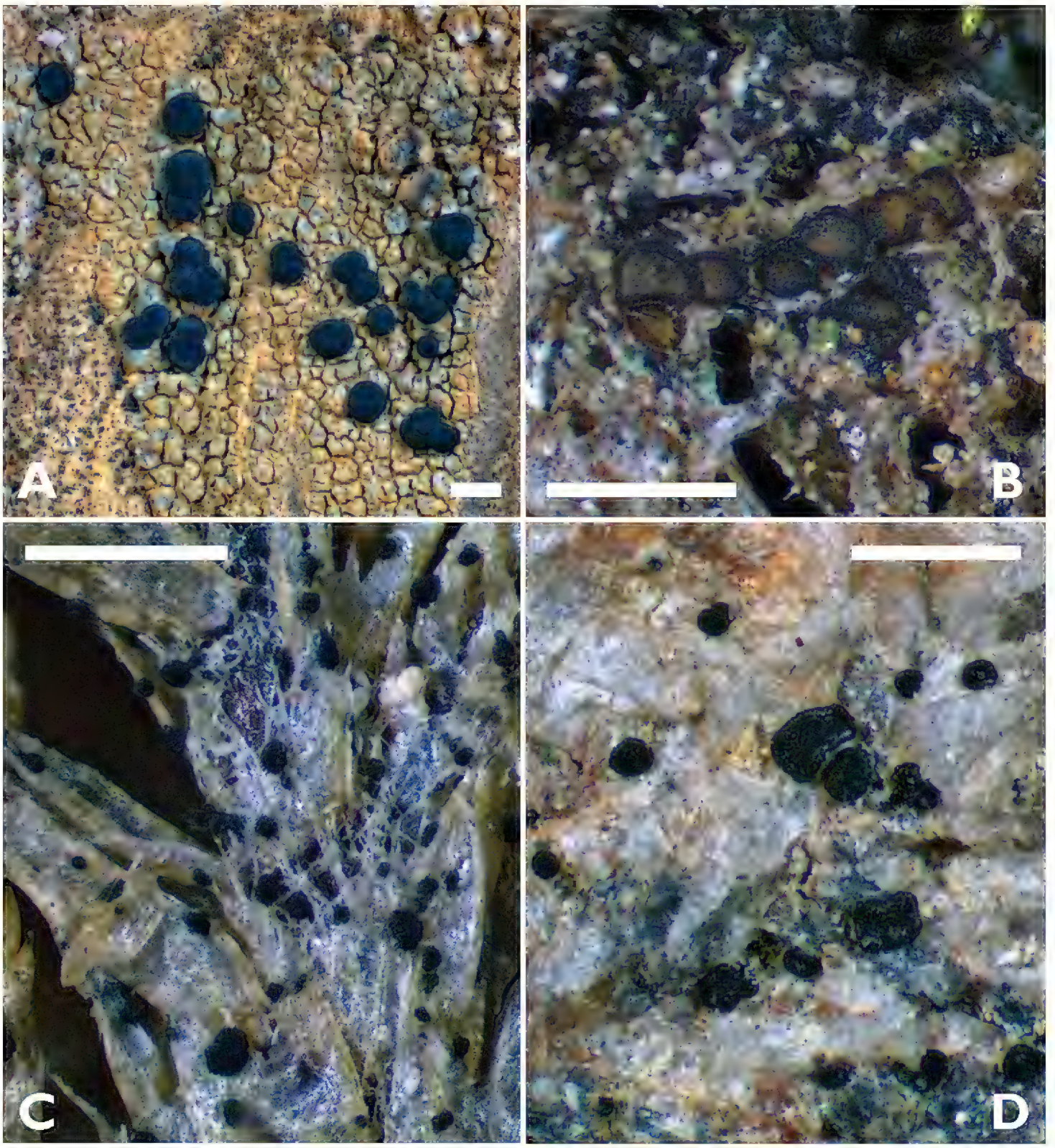

Figure 2. A *Catillaria scotinodes* (UPS L-785594) **B** *Gyalidea subscutellaris* (UPS L-679028) **C** *Micarea hylocomii* (UPS L-803526) **D** *Micarea lynceola* (UPS L-778164). Scale bars: 0.5 mm.

face under an overhang formed by a big mica-schist boulder. This site is part of an extensive boulder field at the nearly horizontal north foot of the very steep Mt. Skjeggen. The boulder field is partly covered by open birch forest, while flat patches between the boulders are mostly covered by small bogs. Other notable lichens found at the site include *Coccotrema citrinescens* P.James & Coppins, *Pannaria hookeri* (Borrer ex Sm.) Nyl., *Spilonema paradoxum* Bornet, and *Sporodictyon cruentum* (Körb.) Körb. Although extensively searched for in the surrounding area, no additional finds were made.

Specimen examined: NORWAY: Nordland, Gildeskål, Skjeggen N, på horisontalt berg under stort overheng, åpen bjørkeskog, MGRS VQ 4084 2625 [= 66.9482°N 13.6461°E], alt. 30 m, 7 June 2013, J. T. Klepsland JK13-L211 (O-L-204569).

Dirina fallax De Not.

Giorn. Bot. Ital. 2: 189 (1846). – Type: Italy, Sardinia, Prov. Sassari: Nurra, Capo (Punta) Falcone, Monte della Crocetta, near sea, alt. c. 50 m, macchia on schistose (silicious) rocks, 1987, T. Ahti 47193 (S F184389, neotype, selected by Tehler et al. 2013, not seen; H, isoneotype, not seen). For synonyms, see Tehler et al. (2013).

New to Sweden. *Dirina fallax* is mainly distributed in the western part of the Mediterranean Region and along the Atlantic coast from northern Morocco to Scotland, with an outpost locality in the Canary Islands. Records from Baden-Württemberg in Germany and the South Bohemian and South Moravian Regions of the Czech Republic are geographically closest to the the Swedish locality (Tehler et al. 2013). However, Norwegian material determined as *D. massiliensis* Durieu & Mont. has not been examined by us and may partly represent *D. fallax*.

Dirina fallax was first collected in Sweden 1998 on Mt. Omberg in the province of Östergötland and was reported as *D. massiliensis* f. *sorediata* by Nordin and Hermansson (1999). They noted the siliceous substrate and the thin, dark thallus. The species was again observed at the same locality when visited by the Swedish Lichenological Society during an excursion in 2015 (Westberg and Arup 2016). The Swedish material is sorediate and lacks apothecia (see photograph in Westberg and Arup 2016, Fig. 3).

For a long time, *Dirina fallax* was treated as a synonym of *D. massiliensis*. Molecular data, however, show that they are distinct species, although closely related (Tehler et al. 2013). The shape and size of apothecia, ascospores and conidia as well as the secondary chemistry (erythrin, ± lecanoric acid and unidentified substances) are the same in both species. *D. fallax*, however, has a thinner and usually more brownish grey thallus compared to the thicker, whitish and chalk-like thallus of *D. massiliensis* (Tehler et al. 2013). The thallus and apothecial thalline margin of *D. fallax* vary considerably in colour, from dark brown over greyish to creamy white. *D. fallax* is confined to acidic rocks, *D. massiliensis* to calcareous rocks. Sorediate specimens of *Dirina fallax* are morphologically indistinguishable from sorediate specimens of *D. canariensis* Tehler & Ertz, which is considered endemic to the Canary Islands (Tehler et al. 2013).

Specimens examined: SWEDEN: Östergötland, Västra Tollstad par., Mt Omberg, Alvastra, beech forest N of the ruins, 58°17'N 14°39'E, alt. 150 m., on overhanging rock, 9 May 1998, A. Nordin 5056 (TLC: erythrin and unknown substance) (UPS L-099094); ibid., 25 April 2015, U. Arup L-15009 (LD).

Fellhaneropsis almquistiorum S.Ekman

Nord. J. Bot. 33: 641 (2015). – Type: Sweden, Medelpad, Liden par., eastern escarpment of Mt Vättaberget, on shaded stones on the ground just below vertical rock face, 62.69496°N 16.77550°E, 150 m a.s.l., 13 September 2011, S. Ekman 5607 and M. Svensson (UPS L-684029, holotype, seen by SE; GZU, isotype, seen by SE).

New to Norway. Previously reported from central Sweden, central Germany (Ekman 2015), and Finland (Pykälä 2017).

The Norwegian finds are located c. 20 km apart in the area between the Oslofjord and lake Øyeren, in sheltered sites with old-growth bilberry-spruce forest. At both sites, the species was found exclusively on mineral-rich black biotite rock in deep shade, sheltered from rain and trickling water by overhanging rocks. The only associated lichen species recorded was *Brianaria lutulata* (Nyl.) S.Ekman & M.Svensson (found at both sites).

Additional specimens examined: NORWAY: Akershus, Enebakk municipality, Gaupestein, on deeply shaded rock (biotite gneiss) below huge overhang in old-growth bilberry-spruce forest, MGRS PM 1203 2028 [= 59.7054°N 10.9910°E], alt. 235 m, 17 May 2014, J. T. Klepsland JK14-L118 (O-L-206531, UPS L-785595). Oslo, Oslo kommune, Sarabråten N, på nesten vertikal bergflate (glimmergneis) i skyggefull bergsprekk, bergskrent i eldre granskog, MGRS PM 0522 4106 [=59.8937°N 10.8806°E], alt. 230 m, 27 April 2014, J. T. Klepsland JK14-L678 (O-L-206547).

Frutidella furfuracea **(Anzi) M.Westb. & M.Svensson, comb. nov.**
MycoBank: MB819390

Biatora furfuracea Anzi, Comment. Soc. Crittog. Ital. 2: 13 (1864). *Biatora amaurospoda* Anzi, Comment. Soc. Crittog. Ital. 2: 13 (1864), *nom. inval.* [ICN Art. 32.1a] or *nom. illeg.* [ICN Art. 52.1]. *Lecidea furfuracea* (Anzi) Jatta, Sylloge Lich. Ital. 326 (1900), non Pers., *nom. illeg.* [ICN Art. 53.1]. *Lecidea anziana* Zahlbr., Cat. Lich. Univ. 3: 733 (1925). – Type: Italy, Lombardy, "sui tronchi marcidi dei pini nell' alpe Suena, Bormio", M. Anzi [?] (MOD, lectotype selected by Printzen 1995 [ICN Art. 9.9], not seen; UPS L-202807, isolectotype, seen by MW and MS).

Biatora pullata Norman, Öfvers. Kongl. Vet.-Akad. Förhandl. 27: 803 (1870). *Lecidea pullata* (Norman) Th.Fr., Lichenogr. Scand. 2: 471 (1874). *Frutidella pullata* (Norman) Schmull, Mycologia 103: 990 (2011). – Type: Norway, Nordland, Maalselven, ad Kirkennaes convallis, J. M. Norman, (BG, syntype, not seen).

Lecidea perobscurans Nyl., Flora 58: 11 (1875). – Type: Finland, Korpilahti, Soima, supra cort[icem] Betulae vetust[um], 1873, E. A. Vainio, (TUR-V 22982, lectotype, selected by Printzen 1995 [ICN Art. 9.9], not seen; H, H-NYL 21097, isotypes, not seen).

Lecidea ostrogothensis Nyl. in Hulting, Bot. Not. 1892: 123 (1892). – Type: Sweden, Ostrogothia, Kvarsebo, ad cortices ligna Pini silvestris, 1891, J. Hulting (H-NYL 21210, holotype, not seen).

Remarks. The complicated nomenclature of this species was clarified by Jørgensen et al. (2002, see also Printzen 1995). In summary, the oldest name is *Biatora furfuracea*, validly and legitimately described in 1864, while *B. amaurospoda* is either an invalid or illegitimate name (depending on whether it is considered effectively published or

not). *Lecidea furfuracea* (Anzi) Jatta is, however, not available in *Lecidea* because of the existence of an earlier homonym, *L. furfuracea* Pers., described in 1826. As pointed out by Jørgensen et al. (2002), the younger synonym *L. pullata* should therefore be used as long as the species is treated in *Lecidea*. However, when transferred to *Frutidella*, as was done by Schmull et al. (2011), the oldest epithet becomes available and *F. furfuracea* is consequently the correct name.

Gyalidea subscutellaris (Vězda) Vězda

Fig. 2B

Folia Geobot. Phytotax. Bohemoslov. 1: 327 (1966). *Gyalecta subscutellaris* Vězda, Biológia, Bratislava 15: 173 (1960). – Type: Slovakia, Tatra Magna, in ascensu occid. alpis Ostrva, supra muscos destructos, 1750 m.a.s.l., 22 August 1958, A. Vězda (PRA-V-03129, holotype, not seen, PRA-V-05551, isotype, not seen; UPS L-093370, L-159273, isotypes, seen by AN and MW).

New to Fennoscandia. When originally described, *Gyalidea subscutellaris* was placed in *Gyalecta* (Vězda 1960). It was found overgrowing mosses at a high-elevation locality in the Tatra Mountains of Slovakia. Later, it was reported from the Polish part of the Tatra Mountains (Flakus 2007) and in the United Kingdom (Gilbert et al. 2009). The species is characterized by small apothecia (up to 0.5 mm diam., but usually smaller) with a dark brown to black rim and a brownish concave disc, developed on an inconspicuous thallus encrusting soil and bryophytes on basic, metal-rich (Britain) or slightly acidic ground (Tatra). According to Gilbert et al. (2009), the ascospores are muriform and measure (15–)17–20(–22) × 7–10 µm. The Swedish material agrees well with the isotypes at UPS, except that ascospores in Nordin 6631 are poorly developed and do not exceed 16 × 8 µm. In addition, the disc is black and concolourous with the rim in this specimen, a phenomenon potentially caused by environmental factors. In southern Sweden (Gotland and Uppland), *G. subscutellaris* was collected on calcareous ground, whereas the northern sites in Jämtland are situated on metal-rich soil at an old copper mine as well as on acidic ground.

Additional specimens examined: SWEDEN: Gotland, Kräklingbo par., c. 1.9 km SE of Kräklingbo church, along the small road towards Torsburgen, 57.438668°N 18.740235°E, on mosses on calcareous ground, 13 September 2016, M. Westberg & M. Wedin (UPS L-785598). Gotland, Östergarn par., Herrvik, just W of the harbour, 57.42288°N 18.910357°E, on mosses over limestone outcrops, 13 September 2016, M. Westberg & M. Wedin (UPS L-785599). Jämtland, Åre par., Fröå copper mines, E of the building with the pumps, on dead mosses on sandy ground, 63.40361°N 13.21028°E, alt. 645 m, 30 August 2008, A. Nordin 6631 (UPS L-182990). Jämtland, Åre par., Handöl, Handöl rapids, E river bank at the dam above the rapids, on open gravelly ground, 63.24394°N 12.44044°E, alt. 640 m, 29 August 2014, A. Nordin 7633 (UPS L-679028). Uppland, Djurö par., Runmarö, Norestranden c. 450 m NE of Nore, 59.27935°N 18.79779°E. 25 October 2008, M. Westberg 08-429 (S F297927).

Lecania inundata (Hepp ex Körb.) M.Mayrhofer

In Nimis & Poelt, Stud. Geobot. 7 (suppl. 1): 111 (1987). *Biatorina inundata* Hepp ex Körb., Parerga Lichenol. 2: 145 (1860). – Type: Germany, Baden-Württemberg, Heidelberg, an Granitblöcken im Neckar, W. E. von Ahles (L, lectotype, selected by Mayrhofer 1988 [ICN Art. 9.9], not seen)

New to Norway. This species is widely distributed in Europe and North America (Mayrhofer 1988, van den Boom and Ryan 2004).

The Norwegian specimen is typical of the species in having a coarsely papillate thallus surface. The papillae have a cortex and are larger than the blastidia in the otherwise similar *L. erysibe* (Ach.) Mudd. The material was collected in a steep, south-facing rock wall composed of calciferous meta-sandstone subjected to trickling water. The site is located close to the large river Lågen, near the bottom of the valley Gudbrandsdalen. This part of Gudbrandsdalen is one of the driest and most summer-warm places in Norway, with a weakly continental climate. Several saxicolous lichen species are, at least in modern times, largely confined to a limited inner section of this or a few neighbouring valleys, e.g. *Lecanora margacea* Poelt, *Lobothallia praeradiosa* (Nyl.) Hafellner, *Peltula placodizans* (Zahlbr.) Wetmore, *Rhizocarpon vorax* Poelt & Hafellner, *Squamarina magnussonii* Frey & Poelt, *S. pachylepidea* (Hellb.) Poelt, *Toninia cinereovirens* (Schaer.) A.Massal., and *T. ruginosa* (Tuck.) Herre.

Specimens examined: NORWAY: Oppland, Sør-Fron municipality, Steberg S, kalkrikt skråberg, sigevannspåvirket, MGRS NP 5352 2443 [= 61.5496°N 10.0071°E], alt. 260 m, 4 August 2011, J. T. Klepsland JK11-L552 (O L-183713). GERMANY: Baden-Württemberg, "an Granitfelsen im Neckar bei Heidelberg", before 1860, W. von Zwackh-Holzhausen in Zwackh-Holzhausen: Lichenes exsiccati 258 (UPS, probable topotype, seen by SE, according to Körber 1860 collected at the same or nearby locality as the lectotype).

Lecania suavis (Müll.Arg.) Mig.

Flora von Deutschland: 331 (1926). *Callopisma suave* Müll.Arg., Flora (Regensburg) 55: 472 (1872). *Lecanora suavis* (Müll.Arg.) Stizenb., Ber. Tät. St Gall. naturw. Ges. 1880-1881: 373 (1882). – Type: France, Haute-Savoie, in saxis dolomiticus montis jurassici, Reculet, 1872, J. Müller Argoviensis (G, syntypes, not seen).

New to Norway. Apparently widespread in much of Europe, although with a concentration of finds in Central Europe and relatively few finds in eastern Europe (Mayrhofer 1988, Gavrylenko and Khodosovtsev 2009, Urbanavichus and Urbanavichene 2011).

Currently known from two sites in northern Norway, both in the county of Troms. At both sites, the species was found growing on calcareous rock under overhangs, on

limestone and marble, respectively. Despite being sheltered from rain, both sites are fairly open and sun-exposed. The Balsfjord locality lies at the rim of a lake and is surrounded by birch forest, whereas the Lavangen locality is situated in the low-alpine zone.

Specimens examined: NORWAY: Troms, Lavangen, Kolbanelva S, på berghylle (marmor) under overheng, lavalpin sone, MGRS CB 7976 2104 [=68.6752°N 18.0363°E], alt. 650 m, 23 August 2015, J. T. Klepsland JK15-L853 (O-L-207256). Troms, Balsfjord, Sagelvvatnet NV, på soleksponert kalkberg, under overheng, ferskvannsstrandsone, MGRS DB 2433 7833 [=69.2024°N 19.0902°E], alt. 96 m, 22 August 2015, J. T. Klepsland JK15-L827 (O-L-206522).

Micarea capitata M.Svensson & G.Thor

Lichenologist 43: 401 (2011). – Type: Sweden, Härjedalen, "Tännäs parish, the E slope of Mt. Ramundberget, above the holiday village of Kvarnbäcken, subalpine deciduous forest, on *Hylocomium splendens* on boulder", 62°41'654"N 12°23'662"E, alt. 730 m, 2 June 2007, M. Svensson 1004 (UPS L-532764, holotype, seen by MS).

New to Norway. Previously known only from two Swedish collections (Svensson and Thor 2011).

A small patch of this species was found growing on the upper side of a leaning (almost horizontal), moss-covered trunk of a living *Sorbus aucuparia* in an old-growth forest dominated by *Betula pubescens* and *Populus tremula*. The site lies close to the coast at the island Meløya in Nordland county, northern Norway. The site is further characterized by big boulders and a few vertical rock walls, which contribute to a sheltered and humid microclimate. *M. capitata* inhabited both *Hylocomium splendens* (Hedw.) Schimp and *Hypnum cupressiforme* Hedw. Another rare muscicolous lichen, *Gyalideopsis muscicola* P.James & Vězda, was found on the same trunk.

Micarea capitata is perhaps most likely to be confused with *M. hylocomii* Poelt & Döbbeler (see note under that species below). Another species similar to *M. capitata* is *M. olivacea* Coppins, which was not discussed by Svensson and Thor (2011). Our observations indicate that *M. olivacea* differs from *M. capitata* by having apothecia without a clearly constricted base, a dark olivaceous K+ green pigment in the hymenium and hypothecium, and abundant pycnidia (unknown in *M. capitata*). *M. olivacea* has been found growing on lignum and on rock, not over bryophytes (Coppins 1983, 2009b).

Additional specimen examined: NORWAY: Nordland, Meløy, Meløytinden N, på mosekledd, nesten liggende stamme av rogn, eldre bærlyng-osp-bjørkeskog omgitt av bergvegger og store steinblokker, MGRS VQ 3154 1489 [=66.8444°N 13.4397°E], alt. 25 m, 14 July 2016, J. T. Klepsland JK16-609 (O-L-206446).

Specimen examined of *Micarea olivacea*: Scotland, Caledonia, "Mid Ebudes: Mull, Aros, Druimfin, on V. C. 1o3, on a stump by a conifer plantation", 15 May 1968, P. W. James (BM 000975572, holotype, seen by MS).

Micarea deminuta Coppins

Bibl. Lich. 58: 58 (1995). – Type: Scotland, Stirlingshire (VC 86): Inversnaid, Pollochro Woods, grid 27/334108, on decaying log, 30 April 1987, A. Orange 4928 (NMW, holotype, not seen; E, isotype, not seen).

New to Fennoscandia. Initially described on material from Belgium and Great Britain (Coppins 1995), the distribution of *M. deminuta* has proven to be wide. Apart from additional European records (e.g., the Czech Republic, Palice 1999; Poland, Czarnota 2007), the species is now also known from Japan, North America, and Tasmania (Coppins 2009b, Czarnota 2004).

The species was found colonizing an extensive area of soft wood on the upper side of a large, moderately to well decomposed log of *Populus tremula*. The site is an old-growth forest dominated by *Picea abies* and *Populus tremula*, between a lakelet in the east and a steep hill to the west, and consequently sheltered from direct sun. We also found an additional Norwegian specimen in UPS, where the species grew over plant debris, but any other ecological information is lacking.

Specimen examined: NORWAY: Aust-Agder, Åmli, Lyngvatn V, på myk yteved av morken ospelåg, eldre blåbær-smyle-granskog med osp, MGRS ML 6334 1262 [=58.7521°N 8.3665°E], alt. 455 m, 10 August 2016, J. T. Klepsland JK16-723 (O-L-206476). Hordaland, Ulvik, Finse, L. Finsenut, 21 July 1916, G. Einar Du Rietz (UPS L-598807).

Micarea hylocomii Poelt & Döbbeler

Fig. 2C

Bot. Jahrb. Syst. 96: 341 (1975). – Type: Austria, "Rhätische Alpen, Samnaun-Gruppe, Tirol: Bergwald am Weg von Serfaus nach Madatschen, gegen 1500 m nahe am Madatschen", 15 September 1972, J. Poelt (GZU, holotype, seen by MS).

Thallus forming small patches on leaves of *Hylocomium splendens*, thin, faint grey-greenish grey, episubstratal. *Photobiont* cells regularly globose, 4–7 µm diam. (–10 µm according to Poelt and Döbbeler 1975), occurring in clusters inside the thallus. *Apothecia* numerous, scattered, immarginate, convex-hemispherical, ± adnate or sometimes with slightly constricted base, black or rarely grey (when young or when lacking green pigment), when wet often with a faint blue-green tinge, 0.06–0.12 mm diam. *Epihymenium* indistinct, light–dark blue-green, sometimes with dark brown tinges, c. 5 µm high, K–, C–, N+ red. *Hymenium* hyaline to light-dark blue-green in streaks, 19–35 µm tall, C– (blue-green pigment rapidly fading), N± red, I+ blue, K–, KI+ blue. *Hypothecium* hyaline to light brown without any red or purple tinge, K–, C–, N– (N± red if the blue-green pigment reaches the hypothecium). *Paraphyses* few and difficult to discern, simple or sparingly branched, colourless, 1–1.5(–2) µm wide, apices not or slightly thickened (–3 µm wide), hyaline. *Exciple* not seen, even in sections of young

apothecia. *Asci* clavate, apically thickened, 8-spored, with wall KI+ blue throughout the length of the ascus, 18–32 × 8–13 µm. *Ascospores* narrowly ellipsoid, straight or slightly curved, 0–1-septate, (7–)8–10(–15) × (1.5–)2(–3) µm. *Pycnidia* not seen.

Chemistry. Thallus K–, C–, Pd–, UV–. No lichen substances detected by HPTLC.

New to Sweden. Initially described from Austria (Poelt and Döbbeler 1975), *M. hylocomii* has subsequently been reported from Norway and Switzerland (Poelt and Buschardt 1978, Poelt, Plantae Graecenses, Lichenes, no. 94).

After noting some discrepancies between the Scandinavian material and the original description, we examined all available material of *M. hylocomii*, including the holotype. The main difference between our new description and the original one concerns the paraphyses, which Poelt and Döbbeler (1975) described as having spherical apices with dark brown or black pigment hoods. Generally, the extremely small size of the apothecia and the scarcity of paraphyses make these characters difficult to observe, but although the apices are slightly thickened in the Scandinavian material, no dark brown or black pigment hoods were seen. Subsequent examinations revealed that there are no such apical pigment hoods in the holotype either. However, the dark blue-green and brown pigments present in *M. hylocomii* are often concentrated to the upper part of the apothecium and seemingly adhere to the outer surface of the paraphyses, thus sometimes giving the impression of faint pigment hoods. Another discrepancy concerns the ascospores, which Poelt and Döbbeler (1975) described as 1-septate, but there are non-septate ascospores present in the holotype. There is generally some variation in the proportion of simple and 1-septate ascospores between the specimens, ranging from the exclusively simple ascospores in Svensson 725 to the mostly 1-septate ascospores in Svensson 1050.

The anatomy of the paraphyses as well as the uniformly KI+ blue ascus wall led Poelt and Döbbeler (1975) to suggest that *M. hylocomii* belongs in an undescribed genus, an opinion that was shared by Coppins (1983). As described here, however, the anatomy of the paraphyses is not clearly inconsistent with a placement in *Micarea*, which is true of most other characters as well (e.g. ascospores, size of the photobiont). Unfortunately we were, in spite of many attempts, unable to observe a well-developed apical apparatus. As noted by the original authors, however, the asci do seem somewhat unusual in displaying a strong, uniformly KI+ blue reaction throughout their length. Whether this is an indication of a different generic affiliation than *Micarea* should be further investigated using molecular methods.

In Norway and Sweden, *Micarea hylocomii* has always been collected on *Hylocomium splendens*, usually where the bryophyte is hanging down the vertical side of a boulder, though not in rain-protected situations. The species has been found on one- to three-year-old shoots of its host, indicating that its substrate is short-lived and that *M. hylocomii* is adapted to frequent dispersal. The ubiquitousness of its host suggests that *M. hylocomii* is likewise common. Jørgensen (1996) suggested that *M. hylocomii* could be a suboceanic species. Although the number of collections is too low to enable an evaluation of this suggestion, *M. hylocomii* may at least turn out to have quite

specific requirements in terms of humidity, since most of the localities are quite humid, either because they are situated in swampy forests or close to a stream.

M. hylocomii is most likely to be confused with *M. capitata*, which also inhabits *Hylocomium splendens*. *M. capitata*, however, differs from *M. hylocomii* by having larger apothecia (0.10–0.35 mm diam.) with a more clearly constricted base, broader ascospores (–4 µm), and by possessing a blue-green pigment that does not fade rapidly in C (Svensson and Thor 2011). Furthermore, *M. capitata* has numerous, branched and anastamosing paraphyses, while paraphyses are scarce and difficult to discern in *M. hylocomii*. Other *Micarea* species with a thin or immersed thallus and minute (–0.2 mm diam.), black apothecia, such as *M. contexta* Hedl., *M. deminuta* Coppins, *M. eximia* Hedl., and *M. olivacea*, may also be confused with *M. hylocomii*, although none of them is known to grow on *H. splendens* (Coppins 1983, Czarnota 2007). *M. deminuta* is readily distinguished by its dark brown pigment in the hypothecium and broader (3–6 µm wide) ascospores (Coppins 1995). More care is needed to separate the other three species, since they too have a green, N+ red pigment in their apothecia. *M. contexta* differs in having constantly 1-septate ascospores with one cell larger than the other. Also, it has a dark green and/or a dark purple pigment in the hypothecium, reacting K+ green (Coppins 1983). *M. eximia* has a light reddish brown, K+ green hypothecium (Coppins 1983). *M. olivacea* has numerous paraphyses, mostly 1-septate ascospores, and a dark olivaceous or olive brown hypothecium that reacts K+ green (Coppins 1983).

Additional specimens examined: NORWAY: Hordaland, Lindås-Halvöya, kleiner Mischwald in geschützter Lage bei Syslak, wenige Meter über dem Lurefjord, 8 September 1976, A. Buschardt, P. M. Jørgensen & J. Poelt (two collections with the same label data, GZU). SWEDEN: Härjedalen, Tännäs par., the W slope of Mt. Trappåsen, 150 m E of the road to Ramundberget, by the small stream Röllekbäcken, subalpine deciduous forest, on *Hylocomium splendens* on boulder by the stream, alt. 725 m, 62°40'N 12°25'E, 4 June 2007, M. Svensson 1038 & 1045 (UPS L-803528, L-803529). Tännäs par., 1.6 km NNE of Bodrösten, old-growth mixed coniferous forest, on *Hylocomium splendens* on an old stump of *Pinus sylvestris*, alt. 730 m, 62°35'N 12°29'E, 4 June 2007, M. Svensson 1050 (UPS L-803556). Jämtland, Kall par., 3.5 km E the small village Öster-Kjoland, S side of the small river Öster-Kjolån, old-growth *Picea abies* forest, on *Hylocomium splendens* on a boulder, alt. 420 m, 63°35'N 12°54'E, 26 May 2006, M. Svensson 725 (UPS L-803526). Västerbotten, Degerfors par., 6 km NE the village Vindeln, 500 m SW the house Nymyrkälen, on c. 1.5 m high boulder in clear-cut with scattered old *Pinus sylvestris*, alt. 200 m, 64°13'55"N 19°49'05"E, 30 May 2012, G. Thor 27772 (UPS L-803527). Åsele Lappmark, Dorotea par., Måntorp, alt. 400 m, 64°23'N 16°26'E, 9 June 2011, M. Lif 240 (UPS L-803525). SWITZERLAND: Graubünden, Oberengadin, Gemeinde Silvaplana, God Surlej, SO Champfer, WNW-seitige, locker von Arven und Lärchen bewaldete Hänge, alt. 1800-1900 m, 11 September 1970, J. Poelt (Pl. Graec. Lich. no 94, GZU, absent from duplicate UPS L-047264).

***Micarea lynceola* (Th.Fr.) Palice**
Fig. 2D

Preslia 71: 313 (1999). *Lecidea lynceola* Th.Fr., Lichenogr. Scand. 2: 561 (1874). *Leimonis lynceola* (Th.Fr.) Aptroot, Index Fungorum 331 (2017). – Type: Norway, Akershus, Oslo, Tveten, 20 May 1868, N. G. Moe 257 (UPS L-094388, lectotype, selected by Hertel 1975 [ICN Art. 9.9], seen by MS).

Micarea excipulata Coppins, Notes RBG Edin. 45: 161 (1988). – Type: Austria, Kärnten, Karawanken: Am Eingang zu Trögener Klam (ca. 7 km WSW Eisenkappel), 46°28'N 14°31'E, 700m, Pioniervegetation auf lose am Grunde liegenden, weich verwitterenden Silikatsteinchen, 5 August 1973, J. Poelt in Hertel, Lecid. Exs. no 54 (M, holotype, not seen; UPS, isotype, seen by MS).

New to Sweden. *M. lynceola* was described from Norway in 1874, but has so far not been correctly reported from Sweden. The species has also been recorded from Ireland, United Kingdom, the Netherlands, Belgium, Germany, Austria, the Czech Republic, Poland, Finland, and the Murmansk Region of Russia (Palice 1999, Aptroot and van Herk 1999, Ertz et al. 2008, Urbanavichus et al. 2008, Coppins 2009b, Czarnota 2011).

M. lynceola is a pioneer species of siliceous rocks and the Swedish collection was made on a loose rock on a road-bank. It is easily confused with *M. polycarpella* (Erichsen) Coppins & Palice, which has similar ecology and to which earlier Swedish records of *M. lynceola* belong (Palice 1999). *M. lynceola*, however, has a well-developed, 30–40 µm wide exciple which is readily distinguished as a non-amyloid zone after treatment with KI, while *M. polycarpella* has 7–10 µm wide excipular rim of pigmented hyphae that does not contrast with the hymenium in KI (Palice 1999).

Additional specimens examined: NORWAY: Akershus, Oslo, Tveten, 20 September 1868, N. G. Moe 257 (UPS L-094386, topotype). SWEDEN: Östergötland, Risinge par., 2.5 km NNW of Lotorp, 250 m N of the tarn Skirgölen, E side of the road, 58.754343°N 15.803343°E, alt. 70 m, 31 May 2011, M. Svensson 2129 (UPS L-778164).

***Micarea soralifera* Guz.-Krzemiń. et al.**

Lichenologist 48: 165 (2016). – Type: Poland, Równina Bielska, Białowieża Primeval Forest, Białowieża National Park, forest section no. 256, Circeo-Alnetum, on log, October 2014, M. Kukwa 13001 & A. Łubek (UGDA, holotype, not seen).

New to Fennoscandia. This recently described species was originally reported from Poland and the Czech Republic (Guzow-Krzemińska et al. 2016). It belongs to the *Micarea prasina* group and is characterized by having distinct soralia and containing micareic acid. In Sweden it has been found in the nature reserve Fiby urskog near Uppsala, where it occurs on decaying logs in an old-growth forest dominated

by conifers, and in one locality in the outskirts of Uppsala, where it grew on wood of *Salix*.

Specimens examined. SWEDEN: Uppland, Husby-Ärlinghundra par., Östra Steninge, along jogging trail c. 500 m NW of the Syrian Orthodox Church, on dead mossy boughs of *Salix* on the ground, 59.62033°N 17.81340°E, 4 October 2016, A. Nordin 8056 (UPS L-797384, HPTLC: micareic acid). Uppland, Vänge par., Fiby urskog Nature Reserve, S part of the reserve, c. 350 m west of Kvarnberg, on decaying log by the trail in old-growth forest dominated by conifers, 59.8827°N 17.3514°E, 8 April 2016, M. Westberg, S. Ekman & G. von Hirschheydt (UPS L-790650, HPTLC: micareic acid). Ibid., E part of the reserve, 50 m E of the river Fibyån and 600 m S of the lake Fibysjön, on dry spruce twig in spruce-dominated forest (old overgrown hayfield from the 1930s), 59.8873°N 17.3457°E 11 May 2016, G. von Hirschheydt, M. Westberg & S. Ekman (UPS L-790652, HPTLC: micareic acid).

Micarea subconfusa (Nyl.) Alstrup

Fig. 3A

in Alstrup et al., Fróðskaparrit 40: 96 (1994). *Lecidea subconfusa* Nyl., Flora 52: 84 (1869). – Type: Faeroe, Strömsö, "Torshavn", August 1867, E. Rostrup (C-L-76663, lectotype, selected by Alstrup in Alstrup et al. 1994 [ICN Art. 9.9], specified here by MS [ICN Art. 9.17]).

Lecidea submoestula Nyl., Flora, Jena 59: 235 (1876). *Micarea submoestula* (Nyl). Coppins in Coppins et al., Lichenologist 24: 367. – Type: Ireland, Co. Galway, "route de Westport", 1876, C. Du Bois Larbalestier, (H-NYL 19033, lectotype, designated here by MS).

New to Fennoscandia. *Micarea subconfusa* is a rarely recorded species, currently known from Ireland, Scotland, and the Faeroe Islands (Alstrup et al. 1994, Coppins 2009b, Coppins and James 1992).

M. subconfusa belongs to the *M. assimilata* group and inhabits acid rocks in the lowlands. It is similar to the alpine *M. paratropa* (Nyl.) Alstrup, but lacks K+ violet pigmentation in the hymenium and has a K – hypothecium. The Swedish specimen grew on wood of an old pilework close to the seashore, which likely represents a case of a primarily saxicolous species occasionally growing on dust-enriched wood. Due to superficial similarities with other, not closely related saxicolous lecideoid lichens, *M. subconfusa* is possibly an overlooked species.

Alstrup in Alstrup et al. (1994) referred to the collections C-L-76662 and C-L-76663 as the "holotype" of *Lecidea subconfusa*, thus effectively designating both as lectotype. We here further specify this by designating the specimen C-L-76663 as lectotype. This specimen has the words "specimen primarium" written with red ink on the sheet to which it is glued, as well as an indication that the specimen has been sent to Nylander ("a Rostrup Nylandro missum"). According to Alstrup et al. (1994), the handwriting is that of Rostrup.

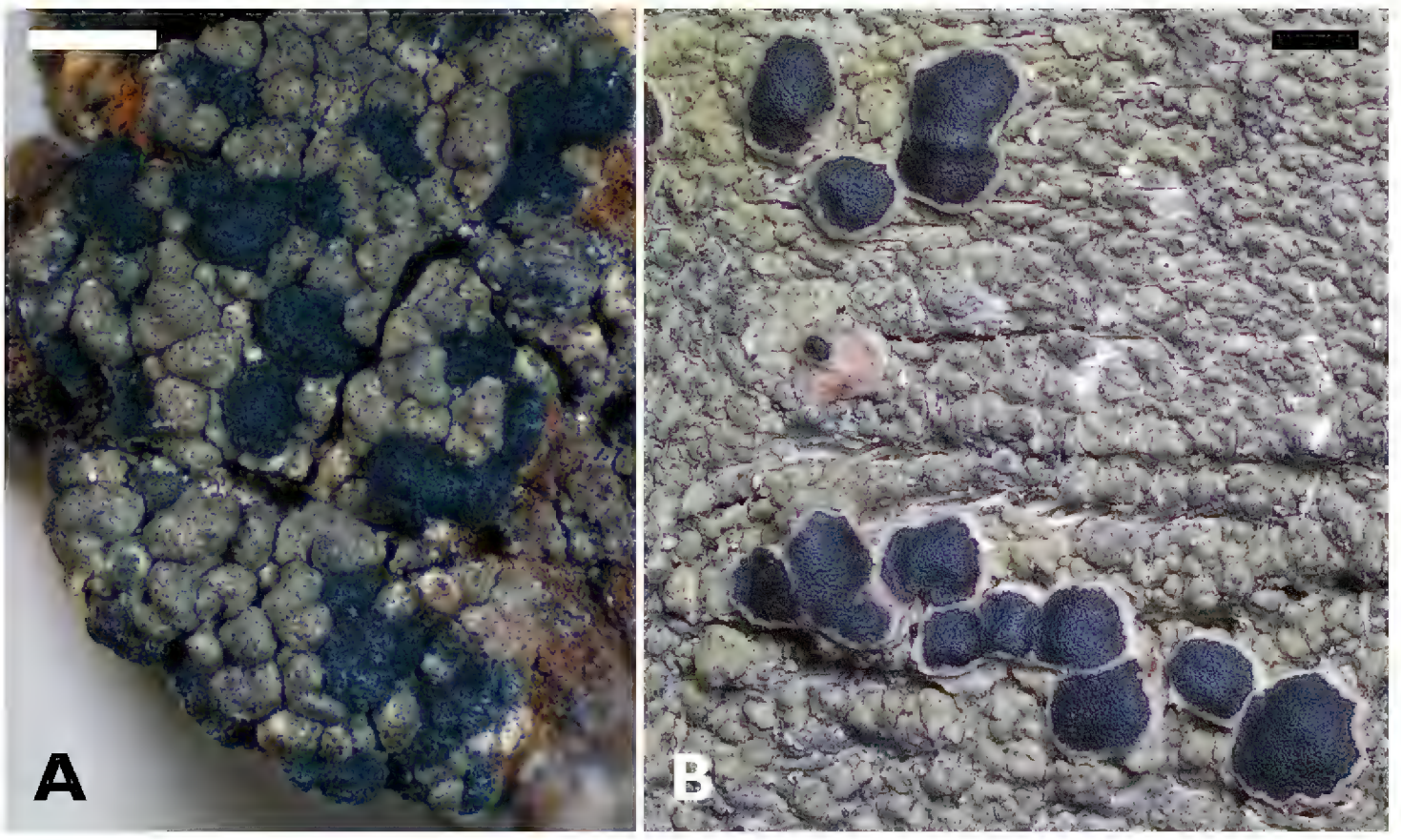

Figure 3. A *Micarea subconfusa* (UPS L-578286) **B** *Mycoblastus sanguinarioides* (UPS L-550384). Scale bars: 0.5 mm (**A**), 1 mm (**B**).

Syntypes of *Lecidea submoestula* are available in BM and H-NYL. The specimen H-NYL 19033 only gives the locality as "route de Westport" and the year as 1876. Two collections in BM are possible duplicates of the Nylander specimen, but give the date as February 1876 and March 1876 respectively, which means that it cannot be ascertained which constitutes a duplicate of the specimen in H-NYL. Consequently, the specimen H-NYL 19033 is chosen here as lectotype of *L. submoestula*.

Additional specimens examined: FAEROE ISLANDS: Strömsö, Kirkuböfjelet, July 1867, E. Rostrup (H-NYL 16944). Strömsö, Thorshavn, July 1867, E. Rostrup (C-L-76662). Strömsö, August 1867, E. Rostrup (C-L-76661). IRELAND: Co. Galway, road to Westport 5 miles from Kylemore, February 1876, C. Du Bois Larbalestier (BM 001062221). Road to Westport, March 1876, C. Du Bois Larbalestier (BM 001062222). Road to Westport, 5 miles from Kylemore Castle, Connemara, 1877, C. Du Bois Larbalestier (BM 001062223). SWEDEN: Gästrikland, Gävle par., Barsagrundet, at Inre Fjärden, 60.68333°N 17.18333°E, 2 January 1988, A. Nordin 2265 (UPS L-578286).

Mycobilimbia tetramera (De Not.) Vitik. et al. ex Hafellner & Türk

Stapfia 76: 154 (2001). *Bilimbia tetramera* De Not., Giorn. Bot. Ital. 2 (1): 191 (1846). *Biatora tetramera* (De Not.) Coppins in Coppins et al., Lichenologist 24: 367 (1992). – Type: Norway, S. C. Sommerfelt (RO, lectotype, selected by Printzen 1995 [ICN Art. 9.9], not seen).

Lecidea atrolivida Vain., Medd. Soc. Fauna Flora Fenn. 10: 10 (1883). *Bilimbia atrolivida* (Vain.) H. Olivier, Bull. Géogr. Bot. 21: 186 (1911). *Bacidia atrolivida* (Vain.) Zahlbr., Cat. Lich. Univ. 4: 101 (1926). – Type: Finland, Kainuu, "Kianta, Saarenmylly, kallion juurella (länttä kohd.)", 1877, E. Vainio (TUR-V 21424, holotype, seen by SE).

New synonym. *Bacidia atrolivida* was listed as an accepted species by Stenroos et al. (2016). The type material, however, consists of typical *Mycobilimbia tetramera*, and the former is consequently reduced into synonymy. According to Vainio (1922), *Bacidia atrolivida* is supposed to differ from '*Bilimbia obscurata*' (i.e., *Mycobilimbia tetramera*) in having a sparsely sorediate thallus, an observation we were unable to confirm. The type material in TUR-V is cited here as the holotype, because it appears to have been the only specimen available to Vainio at the time of description (Alava 1988).

Mycoblastus sanguinarioides Kantvilas

Fig. 3B

Lichenologist 41: 172 (2009). – Type: Australia, Tasmania, Pelion Plains, 1 km W of Pelion Hut, 41°50'S 146°02'E, 890 m altitude, on eucalypt stump in *Eucalyptus delegatensis* open forest, 11 March 1992, G. Kantvilas 267/92 (HO, holotype, not seen; BM, isotype, not seen).

Lecidea sanguinaria var. *lecanoroidea* Nyl., Lichenes Japoniae: 77 (1890). – Type: Japan, Itchigômé, 1879, E. Almquist (H-NYL 10912, syntype, seen by TS).

New to Finland and Sweden. This species was described from Tasmania, Australia (Kantvilas 2009), but has later been shown to be widespread in the Northern Hemisphere (Canada, Japan, Russia, USA; Spribille et al. 2011). There is one collection each from Finland and Sweden in herbarium UPS. Both localities are apparently very humid (near a waterfall and a rapid, respectively). The Swedish locality harbours several rare lichens, such as *Pannaria conoplea* (Ach.) Bory, *Pilophorus robustus* Th.Fr., *Placopsis gelida* (L.) Lindsay, and *Ramalina thrausta* (Ach.) Nyl. (herbarium material in UPS). The Fennoscandian localities are in keeping with the occurrence of the species in humid regions in eastern Eurasia and coastal western and eastern North America.

Mycoblastus sanguinarioides is similar to *M. sanguinarius* (L.) Norman but can be distinguished by often having flat apothecia surrounded by a thin ring of whitish thalline tissue. In contrast, small apothecia of *M. sanguinarius* are usually distinctly convex with a constricted base. Furthermore, the hymenium of *M. sanguinarioides* contains birefringent hymenial crystals, visible in polarized light (see Spribille et al. 2011, Fig. 2). The chemistry of the two Fennoscandian specimens (bourgeanic acid and atranorin) agrees with the chemistry of *M. sanguinarioides* elsewhere in the Northern Hemisphere. Both compounds occur in *M. sanguinarius* as well, but always together with one or several additional compounds. *M. sanguinarius* has four chemotypes (Spribille, unpublished data), three of which are found in northern Europe: (1) rangiformic acid and atranorin (common, northern), (2) bourgeanic acid, caperatic acid and atranorin (mainly in the south), (3) bourgeanic acid, rangiformic acid and atranorin (northern)

and (4) lichesterinic and protolichesterinic acid (currently known from a single saxicolous specimen from the Yukon). Some of these chemotypes might warrant recognition as distinct species (Spribille et al. 2011).

Specimens examined. FINLAND: Karelia borealis [=Pohjois-Karjala], Koli [=Koli National Park], Tarhapuro [water fall], on *Betula* at the water fall, 16 June 1954, G. Degelius (UPS L-202809). SWEDEN: Lule lappmark, Jokkmokk socken, Muddus nationalpark, V-sidan av Mudduskanjon, blockravin några km S om fallet, torr gran, 28 August 1944, B. H. Svenonius MS423 (UPS L-550384).

Paralecia pratorum Brackel et al.

In Liu et al. Fungal Diversity 72: 167 (2015). – Type: Italy, Toscana, Prov. di Massa-Carrara, Prati di Logarghena above the city of Pontremoli, 44°22.848N, 9°56.573E, elev. 845 msl., growing on *Protoparmeliopsis muralis* (Schreb.) M. Choisy, on schistose rock outcrops in a meadow, 7 Oct. 2013, W. von Brackel (M-0045925, holotype, not seen).

New to Fennoscandia. The recently proposed monotypic genus *Paralecia* has been suggested to belong in the Squamarinaceae (Liu et al. 2015). The single species *P. pratorum*, a lichenicolous fungus on *Protoparmeliopsis muralis*, has brown, lecideine apothecia growing on the lobes and apothecial margins of the host. It is further characterized by asci with an I+ dark blue tube-like apical structure, and hyaline and simple ascospores. *Paralecia pratorum* was found growing on its host on the island Runmarö in the Stockholm archipelago. The locality is rich in lichens and with a variety of calcareous and non-calcareous rocks facing the Baltic Sea. The species is so far known only from Italy and Sweden.

Specimen examined. SWEDEN: Uppland, Djurö par., Runmarö, Norestranden, NE of Nore, 59.27868°N 18.79664°E, alt. 20 m, 30 June 2009, M. Westberg & T. Berglund 09-399 (UPS F-787462).

Puttea duplex (Coppins & Aptroot) M.Svensson, comb. nov.

MycoBank: MB819389

Fellhanera duplex Coppins & Aptroot, Lichenologist 40: 368 (2008). – Type: Wales, V.C. 46, Cardigan, Cwm Rheidol, Coed Simdde-lwyd NNR 22/(SN)/718.785, alt. 200 m, open valley-side *Quercus petraea* woodland, on *Hypnum* 'drip tassel' on trunk of fairly well-lit, S-facing *Q. petraea*, 15 April 2001, S. P. Chambers (E-00169970, holotype, seen by MS; GZU, isotype, not seen).

Remarks. New to Sweden. Originally described from Scotland and Wales (Coppins and Aptroot 2008), and was recently reported from Norway (Tønsberg 2016).

When describing this species, Coppins and Aptroot (2008) assigned it to *Fellhanera* on account of its similarity to *F. margaritella* (Hulting) Hafellner. Subsequently, *F. margaritella* was transferred to *Puttea* by Stenroos et al. (2009). *Puttea* was initially

monotypic, but Stenroos et al. listed several other candidates for inclusion, of which two were later combined into the genus: *P. exsequens* (Nyl.) Printzen & Davydov (Davydov and Printzen 2012) and *P. caesia* (Fr.) M.Svensson & T.Sprib. (Dillman et al. 2012). *P. duplex* is distinct from the other three species by having 16–24 ascospores per ascus, but otherwise fits well in *Puttea* on account of having minute, pale apothecia, asci with a KI+ blue tholus penetrated by a canal that slightly widens towards the apex, and crystals that dissolve in K in the epihymenium and hymenium.

According to Coppins and Aptroot (2008), the exciple of *P. duplex* is paraplectenchymatous, which would be consistent with a placement in *Fellhanera* (Lücking 2008), while *Puttea margaritella* (the type species of that genus) has a strongly gelatinized exciple composed of branched, parallel hyphae (Stenroos et al. 2009). Although the exciple of *P. duplex* is often poorly developed and difficult to observe, we found that it is in fact quite similar to that of *P. margaritella*, being strongly gelatinized and consisting of dichotomously branched hyphae with narrowly cylindrical cell lumina.

The Swedish specimen was found on bark of *Betula* in a mature coniferous production forest. The specimen differs from the original description in having longer ascospores (–9 µm versus –5 µm) and by growing directly on bark and not over bryophytes. However, as the original description of *F. duplex* was based on only three specimens, the range of variation in ascospore size is possibly larger than indicated there and the ecology of the species may likewise be broader. Since the Swedish specimen agrees well with the holotype in other respects, we prefer to include it in *P. duplex* pending further studies.

Additional specimen examined: SWEDEN: Hälsingland, Bollnäs par., 8,5 km SW of Hanebo church, 1 km S of Hällbo, SE of Skidtjärnen, on stem of living *Betula pubescens* (23 cm diam.) in mature coniferous forest, alt. 120 m, 61°12'N 16°25'E, 22 August 2012, F. Jonsson FU9206 (UPS L-786606).

Sarcogyne algoviae H.Magn.

In Rabenh. Krypt.-Fl., Edn 2 (Leipzig) 9(5.1): 78. 1935. – Type: Germany, Bayern, "Obere Seealpe in den Allgäuer Alpen bei Oberstdorf, c. 5000'", 1860, H. Rehm (S L2741, holotype, seen by MW).

New to Finland. Previously known from the Alps, *Sarcogyne algoviae* was recently reported from Sweden and Norway (Westberg et al. 2015).

The newly discovered specimen was collected on calcareous rock in northernmost Finland. The species is characterized by apothecia with a strongly carbonized margin, a colourless hypothecium, and narrowly ellipsoid ascospores (Westberg et al. 2015).

Additional specimen examined: FINLAND: Lapponia inarensis, Utsjoki, Kevo Subarctic Research Station, c. 3 km SW cliff Kotkapahta in Kevojoki valley, 20 August 1965, T. Ahti 20905 (H).

***Thelenella pertusariella* (Nyl.) Vain.**

Acta Soc. Fauna Fl. Fenn. 49 (2): 155 (1921). *Verrucaria pertusariella* Nyl., Flora 47: 367 (1864). *Microglaena pertusariella* (Nyl.) Norman, Kongel. Norske Vidensk. Selsk. Skr. 5: 366 (1868). – Type: Russia, Lapponia ponojensis, nära Triostroff, 1863, N. I. Fellmann (H-NYL 1594, lectotype, selected by Mayrhofer 1987 [ICN Art. 9.9], not seen).

Phlyctis submuriformis H.Magn., Arkiv Bot. 33A (1): 117 (1946). – Type: Sweden, Lycksele lappmark, Tärna par., Långfjället, on *Sorbus*, 20 July 1924, A. H. Magnusson 8938a (UPS L-108344, holotype, seen by MS).

Gyalidea fruticola M.Svensson & G.Thor, Lichenologist 39: 335 (2007). – Type: Sweden, Uppland, Häggeby par., 3 km NW of Häggeby church, along the road between Skadevi and Eknäs, broadleaved deciduous forest, on decaying bark on old *Lonicera xylosteum*, alt. 20 m, 59°41'N 17°32'E, 15 January 2006, M. Svensson 616 (UPS L-167526, holotype, seen by MS and GT; S F68480, isotype, seen by MS and GT).

New synonym. *Gyalidea fruticola* was described mainly from material collected on *Lonicera xylosteum* in southern Sweden and seemingly fit into *Gyalidea* on account of having a KI– hymenium (the KI+ pale red-brown reported by Svensson and Thor 2007 is the colour of the iodine), sparingly branched paraphyses, and submuriform ascospores (Svensson and Thor 2007). However, subsequent collections have made it clear that *G. fruticola* cannot be separated from *Thelenella pertusariella*. Like *Gyalidea*, the genus *Thelenella* belongs to the Ostropomycetidae (Nelsen et al. 2017) and displays similar hymenial and ascospore characters. *Thelenella*, however, differs by having perithecia instead of apothecia. Southern morphs of *T. pertusariella* are often very small and perithecia in poor condition often get a gyalectoid appearance, hence the mistaken assignment to *Gyalidea*.

Additional specimens examined: ITALY: Trentino Alto Adige, Trento Prov., Stelvio National Park, Val de la Mare, 400 m SE of Malga Prabon, Bosco di Celvestré, mixed old growth coniferous forest, on dead twig of *Lonicera alpigena*, alt. 1780 m, 46°24'N 10°41'E, 27 July 2006, M. Svensson 853 (UPS L-167599). NORWAY: Varanger, Båtsfjord municipality, the top of the valley Skogdalen, subalpine deciduous forest, on bark of *Salix* sp., alt. 200 m, 70°53'N 29°69'E, 2 July 2014, M. Svensson 2912 (UPS L-803559). SWEDEN: Härjedalen, Ljusnedal par., 1.2 km WNW of Djupdalsvallen, along the track to Mt Gruvvålen, small stream in open subalpine deciduous forest, on dead stem of *Salix lanata* close to the water, alt. 900 m, 62.71832°N 12.43697°E, 24 August 2007, M. Svensson 1114 (UPS L-176178). Jämtland, Kall par., Skäckerfjällen Nature Reserve, 600 m N of Sågen, E side of the river from Lake Nedre Ottsjön, deciduous forest on the shore of the river, on decaying bark of *Alnus incana*, alt. 450 m, 63°44'N 12°33'E, 17 August 2008, M. Svensson 1351 (UPS L-803565). Södermanland, Aspö par., 150 m NW of Aspö church, deciduous forest, at the base of dead stem of *Lonicera xylosteum*, alt. 5 m, 59°29'N 17°23'E, 26 March 2006, M. Svensson 632 (UPS L-166883). Södermanland, Sköldinge par., N of Lake Silingen, by the ruins of the ancient fortress Tjugesta skans, broadleaved deciduous forest, on decaying bark on old *Lonicera xylosteum*, alt. 55 m, 59°01'N 16°16'E, 19

November 2006, M. Svensson 931 (UPS L-167524). Uppland, Alsike par., 300 m N of Dragontorpet, just W of road 255, broadleaved deciduous forest, on decaying bark on old *Lonicera xylosteum*, alt. 20 m, 59°45'N 17°39'E, 8 January 2006, M. Svensson 609 (UPS L-167525). Uppland, Alsike par., 300 m N of Grönvreten, just E of road 255, near ditch, edge of mixed coniferous forest, on decaying bark of *Lonicera xylosteum*, alt. 20 m, 59°46'N 17°39'E, 7 July 2006, M. Svensson 868 (UPS L-167522). Uppland, Gryta par., 3.2 km N the village Örsundsbro, just W of gravel road, near ditch, coniferous forest, on *Lonicera xylosteum*, alt. 40 m, 59°45'N 17°18'E, 2 October 2006, G. Thor 20100 (UPS L-166884). Uppland, Knivsta parish, 1.7 km W of Valloxsäby, c. 400 m N of lake Valloxen, broadleaved deciduous forest, on decaying bark on old *Lonicera xylosteum*, alt. 25 m, 59°44'N 17°50'E, 29 January 2006, M. Svensson 623 (UPS L-167527). Uppland, Sånga par., 1.5 km SE of Sånga church, S of Svartsjö djurgård, E of the road, broadleaved deciduous forest, on decaying bark on *Lonicera xylosteum*, alt. 10 m, 59°20'N 17°43'E, 10 March 2006, M. Svensson 628 (UPS L-167251). Uppland, Söderby-Karl par., 5 km SW of Söderby-Karl church, along the road between Koludden and N. Järsö, Svartbäcksviken, broadleaved deciduous forest, on decaying bark of *Lonicera xylosteum*, alt. 15 m, 59°51'N 18°37'E, 2006, M. Svensson 624 (UPS). Västmanland, Vittinge par., 700 m SE of Månsbo, N shore of Lake Ekholmssjön, deciduous forest, on decaying bark of *Lonicera xylosteum*, alt. 70 m, 59°51'N 17°02'E, 4 February 2007, M. Svensson 947 (UPS L-167523). Östergötland, S:t Anna par., Djursö, 300 m NW of the farm, broadleaved deciduous forest, on decaying bark on old *Lonicera xylosteum*, alt. 5 m, 58.40098°N 16.79018°E, 6 May 2007, M. Svensson 994 (UPS L-171652).

Toninia subnitida (Hellb.) Hafellner & Türk

Stapfia 76: 159 (2001). *Catillaria subnitida* Hellb., Nerikes lafflora 92 (1871). – Type: Sweden, Närke, Tysslinge par., Hjulåsen, 1869, P. J. Hellbom, (O, lectotype, selected by Kilias 1981: 372, not seen; GB-0128121, isolectotype, not seen).

Patellaria tristis Müll.Arg., Mém. Soc. Phys. Hist. Nat. Genève 16: 398 (1862). *Catillaria tristis* (Müll.Arg.) Arnold, Verh. Zool.-Bot. Ges. Wien 29: 362 (1879). *Kiliasia tristis* (Müll.Arg.) Hafellner, Beih. Nova Hedwigia 79: 265 (1984). – Type: France, Ain, "au-dessus de Chésery dans le Jura français", 28 August 1852, J. Müller (G, holotype, not seen).

Probably new to Norway. Kilias (1981) reported this species from one locality in Nordland in northern Norway based on a specimen collected by G. Degelius. We have, however, been unable to trace this specimen. The same specimen was reported as *Catillaria hypochlorella* (Vain.) Zahlbr. (syn. *Lecidea hypochlorella* Vain., Vainio 1883) by Degelius (1955), who discussed the distinction from *Catillaria subnitida* Hellb. Degelius pointed out the agreement with Vainio's descriptions (1881, 1934), and the identification of this specimen, along with another specimen from Torne lappmark in northern Sweden (Magnusson 1952) as *L. hypochlorella* was upheld by Santesson (1984, and later editions). Vainio (1934) discussed the similarity between *L. hy-*

pochlorella and *T. subnitida*, mentioning that they differ only in the hymenium being entirely green in the former, whereas the latter has a bluish epihymenium. There are, however, additional differences. In *L. hypochlorella*, the hypothecium contains a mixture of green and dull brown pigments, which contrast to the strongly darker proper exciple. In *T. subnitida*, on the other hand, the hypothecium and proper exciple are very similar in hue (dark red-brown) and do not contrast. Furthermore, ascospores in *L. hypochlorella* are 1(–2)-celled, whereas they are consistently 2-celled in *T. subnitida*. The material from Torne lappmark in Sweden (UPS L-785614) represents *L. hypochlorella*. The Norwegian specimens of *Toninia subnitida* had been misidentified as *Bacidia coprodes* (Körb.) Lettau and were discovered while revising material filed under that species (Ekman 2014).

Kilias (1981) reported *T. subnitida* (as *Catillaria tristis*) also from Sweden, Finland, Russia, Germany, Czech Republic, Switzerland, Austria, and Italy. It has later been recorded also from Spain and Montenegro (Hladun and Gómez-Bolea 1982, Knežević and Mayrhofer 2009). Reports from North America are doubtful, as the name was introduced in the checklist of Egan (1987) with reference to Kilias (1981). The latter author, however, does not mention any North American finds.

Additional specimens examined: NORWAY: Akershus, Oslo, Ormø, 5 May 1867, N. G. Moe (UPS L-138580). Akershus, Nordmarken, Tømter, 9 September 1868, N. G. Moe (UPS L-138579). Akerhus, Nordmarken, Tømter, 1868, N. G. Moe 230 (UPS L-138578). Nord-Trøndelag, Snåsa, Bergåsen nature reserve, humid spruce-birch forest in NW-facing slope WSW of lake Heimsjøen, alt. 260 m, 64°15.19'N 12°24.28'E, 12 September 2006, Z. Palice (PRA).

Acknowledgements

We thank the curators of the herbaria BM, C, E, FH, GZU, H, O, S, and TUR for arranging loans and providing images. Ulf Arup (Lund) confirmed *Biatora veteranorum* and Brian Coppins (Edinburgh) confirmed *Cliostomum subtenerum* and *Lecania suavis*. Zdenêk Palice provided us with recent material of *Toninia subnitida* from Norway. Permits to collect lichens in Fiby Nature Reserve were issued to SE, MW and GH by the County Administrative Board in Uppsala. MS, SE and MW thank the Swedish Taxonomy Initiative for financial support (grants nos. 2016-152 4.3, 146/07 1.4 and 156/2011 1.9). Additional financial support to MW for collecting lichens on Gotland was received from Gotlands Botaniska Förening via the Memorial Fund of Lars-Åke Pettersson.

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